

LAVAS AND SOILS

Valuable Treatise By Dr.
Walter Maxwell.Results of Exhaustive Investiga-
tions—Their Application to
Agriculture.Lavas and Soils of the Hawaiian Is-
lands, pp. 186, by Walter Maxwell,
Director and Chief Chemist.

The publication of this book makes a distinct period in the limited literature of these islands. Many books of travel have been written regarding the geological and botanic features of the islands, many more or less valuable accounts of the history of the people that have lived on these islands.

But for the first time since the discovery by Capt. Cook, and the establishment of civilized institutions here, a treatise is before the public, which deals rigidly and in the true scientific spirit of accuracy with the lavas and soils of Hawaii, that is, its surface geology. It is written with the true spirit of inductive philosophy, the collecting and grouping of facts, in the first instance, followed by a judicial reasoning and determination of their value and practical use. It is a single and broad study of the history of our lavas and soils, and a presentation of the laws which have modified and changed them. The changes and sequences are considered, which take place from the moment the internal earth forces effect upon the surface the molten lava and its concomitants down to the operations of atmospheric and chemical agencies until it is ready for the production of forest fruit and vegetables.

While this treatise has a practical aspect, of the highest value, from an economic standpoint and concerns profits of agriculture, manufacture and commerce, it has to the student the larger and more far reaching use in its contribution to geology from the standpoint of the study of freshly created soils, down to the late period, in which these islands came into existence.

The author states that Hawaiian soils are derived from volcanic lavas. These have the composition of normal lavas in some cases, while in others, the same compositions have altered, through chemical and mechanical action into radically different substances, and vary in color. In these transformations, the author shows at length, the action of steam acid vapors and of "weathering."

The action of steam is described as one of the powerful agents in the changes of conditions. On page 12, he states what seems to be a fact of importance that the absence of chlorine in water obtained by condensing steam at the crater indicates that the water of the ocean has not penetrated within the rims of the islands during volcanic action.

The author makes a geological classification of the soils into the dark red, formed by the simple weathering of normal lavas, the yellow and red light soils, in the formation of which steam and sulphurous vapors have mainly acted, and also the sedimentary soils, which are derived from the decomposition of lavas at higher altitudes, and have been removed to lower altitudes by rainfalls.

There is, again, a climatic classification of the upland soils, formed at a lower temperature, containing a larger percentage of organic matter and nitrogen, and with a lower percentage of plant food in an available state, and the lowland soils formed under higher temperatures, and lesser rainfall, containing less organic matter and nitrogen than the upland soils. The percentage of available plant food is larger, owing to accumulations from the upper lands, and the smaller rainfall upon the lower levels.

The conclusion is, and in this, scientific research becomes eminently useful and practical, that the dark red soils and sedimentary soils have more fertility than the yellow or light red soils. Tables of analysis are set forth which justify this conclusion.

The author gives to us a clear definition and origin of "laterites" which are the red earths or ochres, found widely distributed over the surface of the earth in many places. Lyell, Darwin and others have described these silicates of alumina and oxides of iron, as they are found at the Giant Causeway, in Ireland, and in India, and North America. The indefinite views of these observers as to their formation, lying upon basaltic or trap rocks, have been explained by the author of this treatise, who has had the rare advantage of watching the actual formation, of seeing the great natural laboratory in operation. In this respect this treatise is a valuable contribution to knowledge.

The author also treats of the process of "weathering," and the resultant soils.

One portion of the author's investigation will excite much interest among the American geologists. His analyses show that soluble silica in the Hawaiian soils is just double the amount found in the American samples. This fact has a valuable economic aspect. It is one of the indications of the greater fertility of Hawaiian soil, and its capacity for sugar cane production.

The author, however, is able to show by his observations of recent volcanic action in Hawaii, that her soils are in their youth, while those of the United States and Great Britain are in their old age.

Some importance should be given to the observation that "a comparison of

the specific gravities of Hawaiian soils and lavas with the specific gravity of the general surface of the crust of the earth, and of the earth as a body, indicates that the lavas originate at a comparatively small depth below the surface, and thus may not bear any necessary relation to the interior depths and conditions of the globe."

It is impossible here to state at length the author's conclusions regarding the "Availability and loss of the elements of plant food." It is of equal interest to the student scientist and layman. The author's methods are described in detail, and his analyses given. The chapter on the "Elements of plant food removed from Hawaiian soils by water and cropping," is especially interesting in this, that the author gives a new and broad definition of the salts found in ocean waters. The material removed from Hawaiian soils by discharging waters is also described.

The results obtained by Dr. Maxwell will change the common methods of laboratory work. He has studied the processes of Nature first, and supplemented it with the laboratory. He firmly adheres to field work or the study of facts in the first instance. He acknowledges frankly that he has had great advantages in his investigations, because the comparatively small area of the islands enabled him to obtain accurate data that could not be secured on a large continent.

Perhaps some of Dr. Maxwell's conclusions will be challenged by scientists abroad. But his methods have so strictly adhered to the processes of Nature that, he is less open to attack than one who had followed Nature less, and theories more.—THE EDITOR.

SUMNER ANSWERS

Replies to the Suit Instituted By
Maria S. Davis.

PROTESTS RESTRAINING ORDER

Desires to Handle His Own Affairs.
Trust—Affidavits By Wilcox and
Wife and Y. Ahin.

A petition and answers covering about 100 pages of typewritten matter were filed in the District Court yesterday in the injunction case of Maria S. Davis, as next friend of John K. Sumner, against R. W. Wilcox and Theresa Wilcox, Y. Ahin and others. A full account of the "bill to set aside conveyances" and of the granting of a temporary restraining order at night, was given in this paper more than a week ago. W. R. Castle and P. L. Weaver, as attorneys for John K. Sumner, now ask that the restraining order be set aside.

John K. Sumner asks that the suit instituted by Maria S. Davis, his sister, be dismissed, or that as alternatives she make him one of the defendants or be ordered to prosecute the cause in her own name alone. Mr. Sumner sets forth that his sister has no claim, present or prospective upon the large estate owned by him, but intimates that she is making undue effort to gain a hold upon a portion of the property or all of it. Mr. Sumner says that he has been so much annoyed by the interference and planning of his sister and others that he has reached the conclusion that he had best place his estate in the hands of a trustee. He had thought of making a trust conveyance to the French Commissioner, but upon deliberation had decided that some local business man who was a permanent resident would be more suitable for the trust. Pending the final selection of such a person he had, through his friend R. W. Wilcox, transferred property to his wife, Nanito Sumner. He avers his undisputed right to do this or to take any other step with relation to his property that seems to himself advisable. Mr. Sumner makes it plain in his affidavit that the power of attorney issued to Robt. W. Wilcox was for the sole purpose of having Mr. Wilcox collect one certain item of rent due to Sumner.

As to Y. Ahin, Mr. Sumner says he is under personal and monetary obligations to that individual and explains in detail the matter of mortgaging to Ahin the half interest in Quarantine Island for the sum of \$55,000. This was for the purpose of engaging in a big rice plantation enterprise with Ahin. The proposal or plan was to purchase Waikiki rice fields which it is represented have since been sold for \$75,000. The price to be paid by Sumner and Ahin was \$55,000. It is stated that a number of months ago, when the Sumner estate was held in the King receivership, advances of cash were made to be a fair, even liberal settlement with Ahin in time. Sumner was supplied with money for living expenses while his rents were tied up and was furnished with \$300 of collateral with which to secure the service of an attorney.

Affidavits of considerable length are submitted by R. W. Wilcox and his wife, Theresa Wilcox. One point brought out in these statements relates to the change of religion by Mrs. Wilcox—the baptism of herself and children into the Catholic faith. It is submitted that this was a step long contemplated and was not hurried materially by the suggestion of Sumner. Mrs. Wilcox explains her aloha for the Catholic religion by saying that her

great grandfather, the Frenchman J. L. Rives, was largely instrumental in the introduction of the faith into these islands.

Both Mr. and Mrs. Wilcox state that their close business relations with Sumner were established quite recently and that the personal relationship claimed to exist between Mrs. Wilcox and Sumner grows out of intimate friendship of ancestors. Mr. Wilcox and his wife tell of the terror or fear of Sumner that schemes he supposed to be on foot to deprive him to his estate might succeed unless there was intelligent intervention.

Nanito Sumner, wife of John K. Sumner, verifies or corroborates the testimony of her husband and of the Wilcoxes as to designs of various persons upon the estate.

John K. Sumner is 76 years of age. He was born in Hawaii, and inherits his great property. On a visit to Tahiti he married Nanito, who has a chieftess rank amongst the natives of that country. The petition for dismissal or termination of the restraining order in this case will likely be argued today.

On the Oahu Extension.

General Manager Dillingham said yesterday that the Oahu railway extension from Waianae had reached a point but eight miles from Waialua. Waialua will be entered in a couple of weeks and will have trains by the middle of May. Delay, as has been stated before, has been caused by heavy rains. In several cases deep cuts made, were at the time of the floods, filled in by landslides. Contractor Jensen is about ready to begin the work of grading beyond Waialua, in the direction of Kahuku.

TWO BUCKETS AND A PIPE.

Take two common water-buckets; connect them at the bottom with a small pipe. Now undertake to fill one of them with water; you perceive at once that the water tends to fill the other pail also.

"What's the use of saying that?" you ask me. Every fool knows that water in connected reservoirs will assume the same level." Quite so. Yet the wisest men on earth didn't know it once. If the ancient Romans had known it they wouldn't have gone to the trouble and expense of building their great aqueducts. Oh, dear! oh, dear! After a thing is pointed out what a lot of people are able to see it. But to see it the first time? Ah! that takes eyes. To explain it the first time? Ah! that takes brains. The blood circulated through pipes in the human body thousands of years before anybody even suspected it. Isn't that queer? Now, there is a matter—But let's have an example or two first, and the theory afterwards.

A father writes thus about his daughter: "During the summer of 1890 my daughter, Rebecca, got into a weak, languid way. Her appetite was poor, and after eating she had so much pain at the chest and sides that she didn't know where to put herself. She also complained of pain in the pit of the stomach, in the throat, and at the back of the neck. Cold, clammy sweats used to break out all over her. Her breathing became short and laboured, and at times she could not even lie in bed on account of it. She consulted two physicians, who prescribed for her without avail.

"This was her general condition until January, 1893, when she began taking Mother Seigel's Curative Syrup. This preparation certainly had a remarkable effect. One bottle alone greatly relieved her. She relished her food, and got stronger. By simply continuing to use this medicine in three months she was completely cured. Since then she has been well as ever she was. My married daughter, who has suffered from indigestion for a long time, seeing what this remedy had done for Rebecca, took it also, with the same good results. Yours truly, (Signed) Bartholomew Bell, Grocer, etc., Brompton, Northampton, October 25th, 1893."

"All my life," writes a woman, "I have suffered more or less from sickness and spasms. I always felt weak, tired, and languid, and had no desire for company. I had a bad taste in the mouth, and frequently felt sick and prostrate. I had no relish for food, and, after eating, had pain at the chest and side. Such was my manner of life for years. Two years ago my sister told me of Seigel's Syrup; I tried it, and even a few doses relieved me. I continued taking it, and soon my appetite improved, and my food digested. Since that time I have felt quite a new being—so 'light-hearted and strong.' What a pity for me that I didn't know of Seigel's Syrup years before. But better late than never. Yours truly, (Signed) Mrs. Annie Goodger, 20, Bardsolph St., Leicester, May 10th, 1893."

"From childhood," says another, "I have suffered from indigestion and sick headaches. I never felt as if I wanted food, and after eating I experienced the usual pains and distresses of the confirmed dyspeptic. The attacks of sickness and headache were often no less than dreadful. So-called medicines and remedies were, at the best, only temporarily useful. In January, 1892, a friend, living at Hackney, told me of Seigel's Syrup. I used it, and it cured me. I never felt so well in my life as I do now. (Signed) Miss L. White, 92, Barnsbury Road, Islington, London, April 20th, 1893."

Now, see. Evidence like the above (though much more impressive) proves that Mother Seigel's Syrup either cures or relieves almost every known complaint. Yet it never was (nor is it now) recommended for any disease except indigestion and dyspepsia. What is the inference? That nearly every known complaint is caused by indigestion and dyspepsia—is, indeed, a symptom of it.

"But everybody believes that nowadays," you say. Not everybody, but very many. The rest will by-and-by. Although the fact is old as Adam, the discovery of it is new. Yet the principle will presently be as obvious to all as it now is to few.

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